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DOI: https://doi.org/10.1177/2056305118797720

Originally published at:
Hargittai, Eszter; Füchslin, Tobias; Schäfer, Mike S (2018). How do young adults engage with science and research on social media? Some preliminary findings and an agenda for future research. Social Media and Society, 4(3):1-10.
DOI: https://doi.org/10.1177/2056305118797720

Article

SM+S
social media + society

Social Media + Society
July-September 2018: 1–10

DOI: 10.1177/2056305118797720
journals.sagepub.com/home/sms
SAGE

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Eszter Hargittai, Tobias Füchslin, and Mike S. Schäfer

Abstract

While considerable research has looked at how people use the Internet for sharing and engaging with various types of content from celebrity news to politics, very little of this work has considered how non-specialists interact with science and research material on social media. This article reviews literature on public engagement with science to note that this area is ripe for research on social-media-based engagement in particular. Drawing on a survey of American young adults' online experiences, we show that using social media for science and research is at least as likely if not more so as engagement with other topics from similarly serious to lighter domains. We also find that platform matters with young adults much more likely to engage with such content on Facebook rather than on Twitter. We end by proposing more focus on this domain in the area of science communication and work on social media.

Keywords

science communication, online participation, sharing, Facebook, Twitter

Introduction

One of the big promises of the Internet is that it allows people of all backgrounds to share content and engage in conversations no longer dependent on traditional media gatekeepers (Benkler, 2006; Jenkins, 2006; Taylor, 2014). A considerable amount of research has examined whether digital media are meeting this potential from creative content sharing to online political participation (for reviews, see Boulianne, 2015; Brake, 2014; Hargittai & Jennrich, 2016), yet very little of this work has focused on social media's potential for sharing or engaging with content related to science and research. It is this gap in the literature that this article addresses. Building on work by others focusing on different types of online participation (e.g., Correa, 2010; Hoffmann, Lutz, & Meckel, 2014; Schradie, 2011), we argue that focusing on engagement with science and research content on social media should be an important part of research on science communication. To illustrate why this area is ripe for investigation, we analyze data about young adults' interactions with such content on Facebook and Twitter in comparison to other types of content showing that it is a popular domain worthy of research.

The lack of focus on how people engage with scientific topics on social media is surprising for two reasons. First, a wide range of issues that were traditionally the purview of scientists such as climate change and vaccination have become popular topics in the 21st century (e.g., Bauer, 2011; Schmidt, Ivanova, & Schäfer, 2013). Scientists and scientific institutions used to enjoy a high level of autonomy and public legitimacy. Over the last few decades, however, science and society have moved closer together (Gibbons, 1999; Weingart, 2001). Not only has science permeated modern societies by providing exponential technological progress, but the public has also started to scrutinize science in light of potential negative consequences of this progress (Scheufele, 2013). Second, "The science of science communication" (Fischhoff & Scheufele, 2013) is interested in how people engage with science and research. Seeing that science needs public legitimacy in order to secure societal support and an influx of resources (Weingart, 2001), researchers have analyzed how science is seen in society and how far the broader

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public supports it and engages with it (for an overview, see Besley, 2013). Early on, such work focused on ways to reduce people's knowledge deficits, assuming that increased knowledge would lead to more support toward the scientific enterprise (e.g., Miller, 1991, 1996). More recently, work has shifted to the idea that the public's engagement with science is more promising for fostering support for science (e.g., Bucchi, 2008).

Given social media's ability to engage people in various conversations, it could be fertile ground for science communication (Brossard, 2013; Brossard & Scheufele, 2013), particularly among younger people who are avid social media users (Mitchell, Gottfried, Barthel, & Shearer, 2016; Pew Research Center, 2018b). Yet, while research on public engagement with science and technology (PEST) has examined the online domain more generally, it has not yet focused strongly on public engagement through social media. To address this gap in the literature, we explore how a group of young adults engages with science and research on such platforms. First, we review the literature on PEST, differentiating forms of engagement, identifying research gaps, and laying out research questions. Then, we describe our methods and data collection followed by a presentation and discussion of our findings about young adults' engagement with science and research on social media to highlight that this is indeed a domain worthy of more scholarly investigation.

Engaging the Public Through Science Communication

Science Communication Models and the Role of Engagement

Traditionally, scholars of science communication have looked at the way science communicates with the public through the lenses of "public understanding of science" (PUS) or the "deficit model" (Bauer, 2016; Bucchi, 2008). These models assume that the public has deficient knowledge about science, a lack of interest, and low trust in it, and that providing the public more information about science can remedy these alleged "deficits" (Bauer, Allum, & Miller, 2007; Durant, 2003). This provision of information is envisioned as a unidirectional transfer, mainly using science journalism and other information channels to transport information to large audiences (Peters, 1996). These audiences, in turn, are seen as passive receptors of information that do not actively engage with the content in any form.

While the deficit model persists in the minds of many communicators (e.g., Pearce et al., 2017), other models consider an active audience that interacts with science-related content (Gerhards & Schäfer, 2008). Recently, there has been a shift toward a model of "public engagement with science and technology" (Bucchi, 2008)—a model that seems tailor-made for the participatory digital technologies of today. It sees the public as an important stakeholder of science and encourages active engagement, ideally as a two-way communication in which both science and the public engage in a dialogue (Bauer et al., 2007).

This emphasis on PEST models in many countries has led to a "participation explosion" (Einsiedel, 2008, p. 173; for an overview, see Rowe & Frewer, 2005). Many forms and activities of public engagement have emerged, "more or less spontaneous, organized and structured, whereby non-experts become involved, and provide their own input to agenda setting, decision-making, policy forming, and knowledge production processes regarding science" (Bucchi & Neresini, 2008, p. 449). But these activities differ greatly in the type of "engagement" with science they aim for and realize (Davies, 2013). They range from more formal, policy-oriented contexts such as consensus conferences, citizen juries, or scenario workshops (e.g., Andersen & Jaeger, 1999; Durant, 1999) to more informal contexts such as visits to science museums and centers (Bell, 2008), science cafés (Dallas, 2006; Navid & Einsiedel, 2012), and citizen science projects (Lewenstein, 2016).

To organize these different kinds of engagement with science conceptually, Rowe and Frewer (2005) have proposed using "public engagement" as an umbrella term under which they distinguish three kinds of activities depending on the directionality of communication between science and the public. They suggest speaking of "*public communication*" if scientists or science communicators merely convey information to the public—as envisaged by the PUS model of science communication; use of the term "*public consultation*" if the public is asked to provide feedback about science-related content to scientists or science communicators; and "*public participation*" only for instances where scientists or science communicators engage in two-way, dialogical communication with members of the public—which comes closest to the ideal of the PEST model of science communication. Similarly, Einsiedel (2008) distinguishes information provision, consultation, as well as involvement and empowerment (where members of the public are involved in steps of the research process) as forms of PEST.

Engagement Online

The Internet has become the most widely used source of science information among Americans (National Science Board, 2018), leading scholars to analyze how science is presented online and how users interact with such content (e.g., Brossard, 2013; Schäfer, 2012). Social media, in particular, provide the potential for such engagement (Brossard, 2013; Brossard & Scheufele, 2013) through their interactive nature (Treem, Dailey, Pierce, & Biffl, 2016). On social media, users can click on science-related content they find interesting, and they can easily comment on this content to express their opinion. Because social media are widespread and have low barriers for engagement, the roles of users versus producers of content are more easily interchangeable. Users can

become content providers themselves by sharing content with others, and they can do so instantly, very easily including through mobile devices, from wherever they are (cf. Brossard, 2013; Trench, 2008).

As a result, all three of the above-mentioned forms of public engagement are possible on social media: scientists or science communicators can use social media to convey information, to gather public feedback from users, or be involved in public participation, that is, in two-way communication with members of the public regarding scientific issues. This corresponds well to Rowe and Frewer's (2005) typology of engagement and has been conceptualized in very similar fashion among scholars of online communication (McMillan, 2002).

On social media, users will express their engagement with various forms of "interactivity." One is "*content interactivity*" (also called "media interactivity" or "user-to-medium interactivity," see Boczkowski & Mitchelstein, 2012), which refers to how users "control the information they receive" (Stromer-Galley, 2000, p. 121). It covers content navigation, that is, on which links users click to receive further content (McMillan, 2002). "*Human interactivity*" (or "user-to-user interactivity") describes how individuals interact with other individuals (McMillan, 2002). On social media, this mostly refers to commenting on content (including "likes" and "up votes" that send social cues to other users) and to sharing content with others (cf. Boczkowski & Mitchelstein, 2012). On platforms like Facebook and Twitter, human interactivity increases the likelihood of content being visible to others (Boulianne, 2015; van Dijck, 2013) and therefore the chance for further interactivity. Thus, social media enable various types of engagement with science through different forms of interactivity—all of which can raise the number of participants engaged with science.

Young Adults and Online Engagement With Science

The potential for larger-scale online engagement with science seems particularly important when it comes to young adults. According to the Pew Research Center, 98% of US young adults (defined as 18-29 years) use the Internet (Pew Research Center, 2018a) while 88% use social media (Pew Research Center, 2018b). They are much more likely to get their news online (50%) than from traditional news sources such as newspapers (5%), radio (14%), and television (27%) (Mitchell et al., 2016). Among online sources, social media are particularly important. Young adults are not only the most likely age group on social media (Pew Research Center, 2018b), they are also most likely to see social media as one of their major news sources (32%; Gottfried & Shearer, 2016). When it comes to engaging with news content on social media, 47% of young adults "sometimes" or "often" share and 35% comment on news posts (Mitchell et al., 2016).

Regarding science-related content specifically, young users also rely heavily on the Internet, more than other age groups. According to Science and Engineering Indicators (National Science Board, 2018), 81% of young adults (18-24 years) use the Internet as their primary source of science and technology information. The number is even higher (83%) when this group names their primary source to learn about science and technology (National Science Board, 2018). While these figures establish that the Internet is an important source of science information for young adults, it does not address their active engagement with such content on social media in particular.

Previous Studies on Engagement With Science Online and Their Limitations

While representative data sets exist on how young adults and other groups obtain science content online (National Science Board, 2018; Smith, Marsden, Hout, & Kim, 2016), little research has directly surveyed users to study active engagement on social media. Research on PEST focuses mostly on offline forms of engagement, such as discussions in science cafés or the evaluation of scientific issues by citizens in consensus conferences (e.g., Stilgoe, Lock, & Wilsdon, 2014).

Scholarship about social media content related to science has analyzed debates (Dalrymple, Young, & Tully, 2016; Lörcher & Neverla, 2015), has reconstructed communicative networks and core topics around scientific issues (e.g., Büchi, 2017; Pearce, Holmberg, Hellsten, & Nerlich, 2014; Veltri, 2013), has focused on the activity of actors such as nongovernmental organizations and journalists (e.g., Dalrymple et al., 2016; Hopke & Simis, 2015; Pearce et al., 2014), and has inferred academics' motives to use such platforms (e.g., Mewburn & Thomson, 2013), but has not examined active engagement. General survey studies that exist in this domain tend to examine the extent to which respondents use social media, among other sources, to gather information about science focusing on consumption activities rather than active participation (Anderson, Brossard, & Scheufele, 2010; National Science Board, 2018; Smith et al., 2016; Su, Akin, Brossard, Scheufele, & Xenos, 2015).

Regarding platforms, work on social media communication about science has mostly looked at blogs (e.g., A. E. Bauer, 2013; Kouper, 2010), microblogs (e.g., Knight & Kaye, 2016), discussion forums (e.g., Hine, 2014; Lörcher & Neverla, 2015), or comment features in general (e.g., Jaspal, Nerlich, & Koteyko, 2013; Kouper, 2010; Len-Rios, Bhandari, & Medvedeva, 2014). Few science-focused studies have analyzed social network sites like Facebook (as an exception, see Kahle, Sharon, & Baram-Tsabari, 2016). The lack of attention to these platforms is surprising, because they host a considerable amount of scientific content (Brossard, 2013) and are among the most popular social media both in the United States (comScore, 2016) and elsewhere (Alexa, 2017).

In addition, studies that consider social media tend to restrict their analyses to one specific platform such as Twitter (e.g., Knight & Kaye, 2016) or one type of platform such as science blogs (e.g., Fecher & Kaiser, 2015). Given that users

have been shown to turn to several platforms for different purposes, and to integrate them into their personal media repertoires in varying ways (Hasebrink & Popp, 2006), analysis of user behavior across platforms is warranted.

Our article fills these gaps by analyzing data on a diverse group of young adults—the most likely population to use social media—about their engagement with science-related content on two social media platforms, Twitter and Facebook, in addition to sharing such content with others on email. To do so, we consider user engagement with scientific issues in the context of other topical domains. Such comparisons are relevant, because science and research often entail specialist knowledge presented with complex methodological tools and a certain nomenclature, and have therefore been interpreted as "unobtrusive" issues (Dunwoody, 2014; Fischhoff & Scheufele, 2013). Therefore, engagement with science and research on social media might differ in degree and character from engagement with other issues that are partly equally "unobtrusive" but partly also differ from science and research in that respect.

We ask the following research questions:

RQ1. To what extent do young adults use the Internet for science and research content as compared to other content?

RQ2. How does online engagement through clicking and commenting on content about science and research compare to engaging similarly with other types of content?

RQ3. How does sharing science and research content on social media compare to similar engagement with other topics?

RQ3a. How does sharing science and research content differ by platform, is it more popular on Facebook or Twitter, and how do these compare to email?

RQ3b. How does sharing other types of content differ by platform, are they more popular on Facebook or Twitter, and how do they compare to email?

Methods

The data set comes from a larger project whose main purpose was to study young adults' Internet uses where young adults are defined as people in their late teens and early 20s. Because science communication was not the overall project's focus, the available questions are not as nuanced as would be ideal for exploring young adults' engagement with science on social media in depth. There were nonetheless some related questions that have heretofore been unexplored in the literature and give an opportunity to explore engagement with science and research on social media compared to other topics.

Data Collection

The sample is the third wave of a panel study that started in 2009 with 1,115 participants, followed with a second wave of data collection in 2012, and a third wave in 2016, which is the data set used here. In 2009, we worked with the non-flagship campus of a Midwestern state's university system to administer the survey to its first-year population. None of the authors or people associated with the data collection were affiliated with this university, it was chosen thanks to the socioeconomic and racial diversity of its student body as well as the fact that it had a class required of all first-year students to take, making it possible to reach a random sample of its student body. Findings from the analyses of the 2009 wave were replicated on national samples when it comes to the social media uses of the sample suggesting that experiences of this young adult group are not solely representative of them (Nielsen, 2009).

The 2016 sample is representative of both the 2009 and 2012 samples on gender, race/ethnicity, and parental education except that it has fewer African Americans (about the same proportion, however, as in 2012, 8% compared to 11% in 2009). Also in terms of Internet experiences and skills, the 2016 group is representative of the earlier samples on such basic measures as autonomy of use, frequency of use, and Internet skills.

The data set includes responses from 385 young adults surveyed in summer 2016 through postal mail in the United States. We sent the 2016 survey to the 547 participants who responded in 2012 for a 70% response rate (73% of those for whom the surveys did not bounce; 35% of 2009 participants). The original 2009 survey included questions about demographic and socioeconomic characteristics.

Measuring Sociodemography

We asked respondents in what year they were born to calculate their age. Gender was a binary question of male or female. We used parental education as a proxy for socioeconomic status (SES) since more traditional measures of SES do not work well with a group of young adults. We asked respondents to report the education level of both their mother and their father from the following categories: (a) less than high school degree, (b) high school degree, (c) some college, (d) college degree (e.g., BA, BS, BSE), (e) advanced graduate (e.g., master's, professional, PhD, MD, EdD). We aggregated this information by considering the highest level of education that either parent. That is, if a respondent has a father with a high school education and a mother with a college degree, then we recoded the parental education variable for this respondent as "college degree." Following US Census conventions (US Census Bureau, 2000), we asked respondents to indicate if they were of Hispanic or Latino origin. Then, we asked people's race based on the following categories: (a) White/Anglo/Caucasian/Middle Eastern, (b) Black/African American, (c) Asian, (d) American Indian or Alaskan Native, (e) Other. Most responses in the "Other" category indicated Hispanic origin and were coded accordingly.

Measuring Forms of Engagement With Content

The survey asked several questions about how respondents engage with various types of content online. First, it inquired generally about use of the Web for various topics: "How often, if ever, do you use the Internet or the Web for the following?" Then, the survey asked, "Do you ever engage with—such as *click or comment on*—the following types of content others share on social media (like on Facebook or Twitter)?" While it is not ideal that this question collapsed clicking and commenting in its example of what is meant by "engaging with," it does measure engagement. The survey also included the following question: "Have you shared any of the following content in the past year? For each, please indicate if you have shared it (a) on Facebook, (b) on Twitter, (c) through email, (d) through another site/service, or whether you did not share such content at all. For each, check all that apply." In all of the above cases, "science/research" was one of the topical domains listed—a domain that respondents in countries like Switzerland associate mostly with medical research and the natural sciences, followed by engineering, the social sciences, and humanities (Schäfer, Füchslin, Metag, Kristiansen, & Rauchfleisch, 2018). We disaggregated the question by platform as Facebook and Twitter function differently. For example, connections on the former mostly concern mutual connections and are in a somewhat private setting, while the latter tends to be more public and does not necessarily concern mutual connections with friends and acquaintances (thus allowing for a potentially wider reach).

In addition to measuring engagement with science content online, we also inquired about other types of content to offer points of comparison. In this article, we compare engagement with "science, research" to "current events" and "political campaigns and election news" to cover political news, a generally popular topic; engagement with "health, fitness" as a topic related to science and research; "finance, investing" as a different topic, but one of a similarly serious nature; and "entertainment and celebrity news," a lighter topic that research has shown is of particular interest to young adults using social media (Hargittai & Litt, 2011). In the survey, we purposefully listed "health, fitness" before "science, research" to signal to respondents that we considered "health, fitness" a different domain. Topical comparisons allow us to establish the relative popularity of science engagement.

The Sample

In total, 60% of the 385 respondents are female. Most respondents are either 25 or 26 years of age ($M = 25.3$) so we do not include this variable in the analyses. Less than half (43.4%) are White, 23.6% are Asian/Asian American, 22.7% are Hispanic, 7.5% are African American, and less than 1% are Native American. About a quarter (24.8%) come from families where neither parent has more than a high school degree, and an additional 25.6% have parents who did not complete more than some college education. The majority (91%) completed college, half of them in 4 years, the other half in more time. The fact that the majority of respondents have a college degree likely skews the sample toward higher levels of engagement with science and research than would be the case otherwise, something that is important to keep in mind when considering the larger-level implications of the findings. It is important to note, however, that only 15% of the sample is a student so the vast majority are not enrolled in school at the time of this data collection.

In terms of their Internet uses, they range from using it just a couple of hours a week to 8 hr a day, have access at anywhere from 1 to 10 locations, and over half (57%) use smartphones with unlimited data plans. Participants' Web-use skills vary from barely understanding Internet-related terms to considerable familiarity with digital media (27-item index; Cronbach's $\alpha = .95$). On the whole, while everyone in the sample has been an Internet user for many years, their online experiences vary considerably.

Engaging With Science and Research on Social Media

The first research question asked in general terms to what extent young adults use the Internet for science and research as compared to other content. Results show that most young adults turn to the Internet for information about science and research (see Table 1 for all of the results discussed below). Almost all respondents (95.6%) do this, and almost two-thirds (62.9%) do so weekly. The only topic more popular with this group is using the Internet for current events, which almost everybody has done at some point (99.5%) and most do regularly (91.4%). Comparing these figures to the prevalence of using the Internet for other topics, we find that health (96.4% ever, 61.6% weekly or more) and celebrity news (95.0% ever, 63.7% weekly or more) are very similar in popularity (no statistically significant differences), whereas finance and investing is considerably less popular (77.0% ever, 30.1% weekly) as is ever using the Internet for political campaigns or elections news (91.2%).

The second research question asked how clicking and commenting on science and research topics on social media compares to such engagement with others types of content. The majority (81.3%) of the surveyed young adults have clicked on or commented upon information related to science and research before, and more than a third of them (37%) do so weekly. For having done this ever, there is no statistically significant difference when compared to current events although young adults are more likely to engage with such content weekly or more often (54.6%). Such engagement with health and fitness materials is similarly popular, 83.6% have ever done so, and 42.3% do so weekly (no statistical significance in difference). In line with results about use of the Internet for finance and investing, it is also less

Table 1. Use of the Internet and social media in particular to engage with content about science and research, and other topics ($N = 385$).

	Science, research	Current events	Political campaigns, election news[a]	Health	Finance, investing[b]	Entertainment, celebrity news
Uses the Internet for						
Ever	95.6	99.5***	91.2*	96.4	77.0***	95.0
Weekly or more	62.9	91.4***	61.0	61.6	30.6***	63.7
Engages with (clicks/comments on)						
Ever	81.3	83.6	70.1***	83.6	66.2***	76.6
Weekly or more	37.0	54.6***	34.0	42.3	13.8***	33.6
Has shared links to						
On either Facebook or Twitter	39.7	59.4***	26.2***	37.5	14.1***	41.8
On Facebook[c]	44.4	65.0***	28.2***	41.2	15.0***	45.3
On Twitter[c]	9.9	23.1***	14.4	9.3	5.6	21.6***
On email	20.3	16.5	6.0***	14.6	10.7***	8.6***
In any way (includes other sites and email)	53.5	68.9***	31.2***	49.5	24.4***	46.8

Difference in means tests across topic areas.
[a]For general Internet use, this topic stated the more general "politics."
[b]For sharing, this topic stated "finance, economy, investing."
[c]Figures in this row are restricted to users of the platform.
*$p < .01$; ***$p < .001$.

popular on social media with two-thirds (66.2%) having ever clicked or commented on such content and 13.8% doing so weekly. The same holds for political campaigns and election news when it comes to ever engaging with such content (70.1%), although we find no difference among the proportion who do so regularly (34.0%). Over three-fourths (76.6%) of the sample have engaged with entertainment and celebrity news in such a way and a third (33.6%) have done so weekly, figures that are not statistically significantly different from engagement with science and research. Overall, these figures suggest that clicking and commenting on science and research content on social media is a widespread phenomenon among young adults, and more popular than engaging with certain other serious topics (i.e., health, finance/economy/investing, political campaigns/election news).

Finally, we asked how the prevalence of sharing science and research content on social media compared to other content (RQ3), how this differed by platform (RQ3a), and whether we observe platform differences compared to other content (RQ3b). The majority of respondents (84.5%) use Facebook. Considerably fewer (42.1%) use Twitter, and fewer use both (37.9%). Looking at sharing on either Facebook or Twitter, two-fifths (39.7%) of respondents reported having done so in the past year. This is similar to the 37.5% who had shared content about health and fitness, and considerably higher than the 14.4% who had shared content about finance and investing as well as political campaigns and election news (26.2%). Sharing current events information is again the most popular at 59.4%, while sharing celebrity or entertainment news is similar to science and research content at 41.8%. Note that these percentages concern the full sample, not just users of these platforms, as there is value in identifying sharing of content for the whole group. The following set of analyses about sharing on specific platforms controls for use of each respective platform.

Next, we looked at how sharing of science and research content compares across Facebook, Twitter, and email (RQ3a). While 44.4% of respondents who use Facebook had posted such content on the site, only 9.9% among Twitter users had used that platform for sharing such material. Email is much more common than Twitter for such content sharing at 20.3%.

We then looked at whether platform-specific sharing differs for other types of content (RQ3b). Regarding sharing on Facebook, more people share current events (65.0%) than research and science content (44.4%). There is no statistical significance between proportion sharing health (37.5%) as well as entertainment and celebrity news (41.8%). A significantly lower portion, however, share political campaigns/election news (28.2%) as well as finance, economy, investing content (15.0%).

Sharing on Twitter looks different, however. Consistent with all other types of engagement, current events sharing is the most common (23.1%), but we also observe that sharing entertainment and celebrity news is more popular on this platform at 21.6% than science and research at 9.9%. We observe no statistically significant differences compared to political campaigns/election news (14.4%), health (9.3%), and finance, economy, investing (5.6%).

Email sharing, a largely ignored social medium in the study of content sharing these days, is the one type of sharing where nothing is more popular than the sharing of science and research (20.3%) compared to current events at 16.5%, and health at 14.6%, neither of which is a statistically significant difference. Young adults use this medium considerably

less for sharing political campaigns and election news (6.0%); finance, economy, investing (10.7%); as well as entertainment and celebrity news (8.6%).

In sum, the above findings suggest that engaging on social media (as well as on email) with science and research content is relatively popular compared to several other topics. Indeed, the only topic that consistently trumps it in popularity is "current events," a category that can encompass considerable variation in content (including some content that may be related to science and research) and is thus not as helpful as more focused categories such as health and finance, neither of which is more popular than science and research—indeed, the latter is less popular.

Discussion and Conclusion

Our results underline the importance of the Internet, and particularly social media, for young adults' engagement with science and research. The group of young adults we studied widely uses the features provided by social media to engage with such content. They do this more than they engage with finance and investing content as well as political campaigns and election news during a US presidential election year. Sharing science and research content on social media also rivals sharing content about health and fitness as well as entertainment and celebrity news. These findings underline that further analyses of engagement with science and scientific issues on social media are warranted.

Furthermore, our findings highlight the importance of disaggregating online engagement by platform. While Twitter has been shown to be a valuable platform for expert debates about science and research (e.g., Pearce et al., 2014; Yeo et al., 2016), it is not widely used among young adults for science content. Only 4.2% of the sample have used the microblogging platform to share links about science and research, in other words, less than 10% of those who use that platform. This is considerably lower than the 44.4% of Facebook users who have shared such content on that platform. Despite easier researcher access to user content on micro/blogs and forums, future research focusing on people's Facebook use would be more relevant to analyze interactions between science and society. From the perspective of science communication, efforts to reach and engage larger audiences through people's sharing should be more focused on Facebook than Twitter as the latter does not seem to be the place where such action occurs among young adults.

While the article offers a unique look at engaging with science content online, the study has considerable limitations that future research should address. From a conceptual perspective, it is important to note that this study did not gather detailed data about either level of engagement or type of science content consulted. Further studies will hopefully be able to disaggregate between types of interactivity identified in the literature (Boczkowski & Mitchelstein, 2012; Stromer-Galley, 2000) to examine how human interactivity and medium interactivity compare. In addition, future research should gather more specific data about the type of science content users engage on social media. Also, limiting the sample to young adults prevents generalizability to the wider population, but this is the segment of the population most likely to use social media, and we know of no data set with the detailed social media engagement measures about science content presented here that would allow for more generalizable analyses.

In sum, the article makes three contributions to research on social media use as well as science communication. First, social media are an important site for engagement with science and research among young adults rivaling such content as health and fitness but also entertainment and celebrity news, and thus merit focus in the literature on science communication as well as on more general studies of social media use. Second, these users are much more likely to have clicked or commented on such content than to have shared it. The active engagement of contributing to conversations by being the one to set the agenda, that is, putting up a post, is much less common than reacting to existing posts. Future research could explore why this is and how non-specialists may be encouraged to do more of the latter. Third, platforms matter. Facebook is a much more likely site for content sharing about science and research than Twitter. The discrepancy by platform is the largest for science and research content compared to health and fitness, finance and investing, as well as entertainment and celebrity news. These results help establish important baselines about how young adults engage with science and research online while encouraging future research to delve deeper into why the patterns we identify may exist, and examining in more detail the types of engagement around these topics.

Acknowledgements

The authors are grateful to the John D. and Catherine T. MacArthur Foundation and the Robert and Kaye Hiatt Fund at Northwestern University for their support of the project upon which this study is based. They thank the numerous research assistants over the years who assisted the data collection effort, especially Cierra Levy, Sam Mandlsohn, Richard Herndon, Devon Moore, and Bob Babich for their work on the last wave of the project.

Declaration of Conflicting Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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